

Amendment and Response

Applicant: Mark A. Smith et al.

Serial No.: 09/839,385

Filed: April 20, 2001

Docket No.: 10001074-1

Title: INK CONTAINER CONFIGURED TO ESTABLISH RELIABLE FLUIDIC CONNECTION TO A RECEIVING STATION

REMARKS

This Response replies to the Office Action mailed October March 26, 2003, in which Claims 1-8 and 10-20 were rejected. With this Response, claims 1-8 and 10-20 remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 103

The Examiner rejected claims 1-8 and 10-20 under 35 U.S.C. § 103(a) as being unpatentable over Tomikawa et al. U.S. Patent No. 6,039,441 in view of Aono et al. U.S. Patent No. 6,471,321.

Tomikawa et al. is said to disclose the claimed features of the invention including a replaceable ink container (1, Fig. 1a) for providing ink to an inkjet printing system (Fig. 5b), and a method for forming a seal (Fig. 1b). The inkjet printing system is said to include a replaceable printhead 21 and a receiving station 27 for receiving the replaceable ink container. The receiving station is said to have a fluid inlet 24 and a sealing structure 22. The replaceable ink container is said to comprise a reservoir 2 defining a fluid outlet 11 and a sealing surface (surface of 14) proximate the fluid outlet (Fig. 1b). A sealing material (ink in 2) is said to be contained to within the reservoir 2 for wetting the sealing surface (Figs. 1a, 1b), the sealing material between the sealing surface and the sealing structure (column 4, lines 25-26) acting to seal defects between the sealing surface and the sealing structure (ink meniscus between surface of 14 and 22, Fig. 1b). The reservoir is said to contain a quantity of ink (Fig. 1a), and the sealing surface is said to be configured to be sufficiently wettable such that the sealing surface is wet by the sealing material (wet by ink, column 4, lines 25-26 of Tomikawa et al). The storage reservoir is said to have a capillary storage material 3 disposed therein for retaining ink.

However, Tomikawa et al. is said not to disclose: a sealing material including solid particles held in suspension; the solid particles are pigment particles, the solid particles are carbon black particles; and the suspension is a dispersant. Nevertheless, Aono et al. is said to disclose an ink containing black pigments (column 10, line 7) and a dispersant (column 10, line 8) for the purpose of forming ink meniscus (column 10, line

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10). Therefore, the Examiner has taken the position that it would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Tomikawa et al. with a pigment-based ink as disclosed by Aono et al. for the purpose of forming ink meniscus.

Independent claim 1 is directed to a replaceable ink container for providing ink to an inkjet printing system having a receiving station for receiving the replaceable ink container. The receiving station has a fluid inlet and a sealing structure. The replaceable ink container comprises a fluid reservoir defining a fluid outlet and a sealing surface for engaging the sealing structure proximate the fluid outlet, and a sealing material contained within the reservoir for wetting the sealing surface. The sealing material includes solid particles held in suspension. Solidification of the solid particles between the sealing surface and the sealing structure acts to seal defects between the sealing surface and the sealing structure.

Using a sealing material that contains solid particles that come out of a suspension and **solidify between the engaged sealing surface and the sealing structure** creates an improved seal between the sealing surface of the replaceable ink container and the sealing structure of the receiving station. This improved seal seals defects in the engaged sealing surface and/or the sealing structure. The improved seal thereby prevents the loss of volatiles from ink within the container and minimizes the transfer of air into the ink delivery system resulting in improved printing system reliability and an improvement in the quality of printed images. A replaceable ink container having a sealing material including solid particles held in a suspension, where solidification of the solid particles between the engaged sealing surface and the sealing structure acts to seal defects between the sealing surface and the sealing structure is simply not taught, disclosed or anticipated by the combination of Tomikawa et al. and Aono et al.

Tomikawa et al. in Figures 1a, 1b, 2a and 2b is directed to a replaceable ink tank 1 insertable into a holding member 27 of a printing system. The holding member 27 includes a recording head 21 and an elastic jointing member 22. The ink tank 1 includes an ink chamber 2 having a joint port 11 which is connectible to the elastic jointing member 22 to deliver ink from the ink chamber 2 to the recording head 21. The elastic

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jointing member 22 includes an umbrella shaped portion that engages a depressed part 14 of the ink tank 1 to form a hermetic seal therebetween.

Tomikawa et al. does not teach or disclose what is claimed in independent claim 1. In particular, Tomikawa et al. does not teach or disclose the reservoir defining a fluid outlet and a sealing surface configured for engaging the sealing structure proximate the fluid outlet, and the sealing material contained within the reservoir includes solid particles held in suspension, where solidification of the particles **between the sealing surface and the sealing structure** acts to seal defects between the sealing surface and the sealing structure. Rather, in Tomikawa et al. there is no support for a sealing material within an ink container for wetting the area between a sealing surface of the ink container and a sealing structure of a receiving station. There is also no support that solid particles held in suspension in the sealing material solidify between the sealing surface and the sealing structure.

In support of his position, the Examiner has referenced column 4, lines 25-26 of Tomikawa et al. which states "Accordingly, the depressed part 14 is wetted with ink in a state that the ink tank 1 is attached to the recording head." However, a complete reading of Tomikawa et al. clearly indicates that the only portion of depressed part 14 that is wetted with ink is the portion of depressed part not in contact with jointing member 22. Thus, the area between depressed part 14 and jointing member 22 is not wetted. Because there is no ink between depressed part 14 and jointing member 22, it is not possible for solidification of solid particles held in suspension between the sealing surface and the sealing structure to occur, as is set forth in independent claim 1. In fact, it is clear from a complete review of the reference that Tomikawa et al. in fact wants to minimize the amount of ink on depressed part 14.

The Applicant's position is supported throughout Tomikawa et al. For example, column 5, lines 53-60 reads, "When the top edge 33 [of jointing member 22] is brought into contact with the face of the depressed part 14 of the ink tank 1 and an ink passage is formed thereat, a contact area of the depressed part 14 where it contacts ink is small since the opening of the umbrella-like portion 31 is small. Accordingly, when the ink tank 1 is detached from the recording head 21, a small amount of ink sticks to the depressed part

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14, and no ink drips from the ink tank 1.” Similar statements are made throughout Tomikawa et al. (see, for example, column 4, line 62 through column 5, line 2 and column 8, lines 27-31). Tomikawa et al. is describing the advantage of having only a small portion of the depressed part 14 in contact with ink, to minimize the dripping of ink from the ink tank 1. *In fact, the language quoted above teaches that jointing member 22 is designed to minimize the amount of ink on depressed part 14, and further suggests that the only portion of depressed part 14 that contacts ink is the portion of depressed part 14 not in contact with jointing member 22.* This is very different from the invention as claimed in independent claim 1, where the presence of sealing material on the sealing surface is encouraged and in fact desirable such that solidification of the solid particles in the sealing material may occur between the sealing surface and the sealing structure. Tomikawa et al. clearly does not suggest or make obvious the wetting of the area **between** a sealing surface of the ink container and a sealing structure of a receiving station as set forth in independent claim 1, since the only portion of depressed part 14 that contacts ink is the portion of depressed part 14 not in contact with jointing member 22.

Aono et al. does not remedy the deficiencies of Tomikawa et al., since Aono et al. is merely directed to an ink jet recording head capable of realizing substantially constant discharge characteristics for inks of different types (such as dye inks and particle inks). Hence, like Tomikawa et al., there is no support whatsoever in Aono et al. for a sealing surface of the ink container configured for engaging a sealing structure of a receiving station. Further, there is no support for a sealing material within an ink container wetting the area between the sealing surface of the ink container and the sealing structure of the receiving station, and solidifying between the sealing surface and the sealing structure.

For the reasons set forth above, Applicants believe the combination of Tomikawa et al. and Aono et al. does not disclose, teach, suggest or make obvious, either implicitly or explicitly, what is claimed by Applicants in independent claim 1. Applicants therefore believe that the rejection of independent claim 1 under 35 U.S.C. § 103(a) has been overcome and should be withdrawn. Such action is respectfully requested.

Independent claims 7, 10 and 16 include language similar to that referred to above in connection with independent claim 1. Thus, the remarks above directed to independent

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claim 1 are equally applicable to independent claims 7, 10 and 16. Therefore, for the reasons set forth above, Applicants believe the combination of Tomikawa et al. and Aono et al. does not disclose, teach, suggest or make obvious, either explicitly or implicitly, what is claimed by Applicants in independent claims 7, 10 and 16. For the reasons provided, Applicants believe that the rejection of independent claims 7, 10 and 16 under 35 U.S.C. § 103(a) have been overcome and should be withdrawn. Such action is respectfully requested.

Dependent claims 2-6, 8, 11-15 and 17-20 are directly or indirectly dependent upon independent claims 1, 7, 10, and 16. As discussed above, it is believed that independent claims 1, 7, 10, and 16 are now in condition for allowance. Therefore, reconsideration and allowance of dependent claims 2-6, 8, 11-15 and 17-20 is also requested.

CONCLUSION

In light of the above, Applicant believes independent claims 1, 7, 10 and 16, and the claims depending therefrom, are in condition for allowance. Allowance of these claims is respectfully requested.

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Respectfully submitted,

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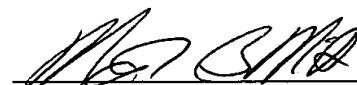
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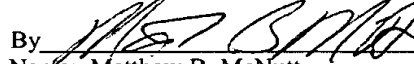
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CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 23113-1450 on this 26th day of June, 2003.

By 
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